

ARCHIVES OF Biochemistry and Biophysics

97
Volume 98 • 1962

Executive Editors

Melvin Cohn
B. L. Horecker
W. D. McElroy

H. S. Mason
F. F. Nord

Howard K. Schachman
Earl R. Stadtman
H. Theorell

Editors

Aaron Bendich
Karl Folkers
David E. Green
François Gros
D. J. Hanahan
Osamu Hayaishi
C. H. W. Hirs
Harvey Itano
Herman M. Kalckar

Ephraim Katchalski
Irving M. Klotz
Luis F. Leloir
C. H. Li
F. Lynen
A. Neuberger
Rodney R. Porter
Jesse C. Rabinowitz

Thressa C. Stadtman
F. M. Strong
P. K. Stumpf
Andrew G. Szent-Györgyi
Kenneth V. Thimann
W. W. Umbreit
Birgit Vennesland
Gregorio Weber
Sidney Weinhouse



ACADEMIC PRESS
New York and London

Copyright ©, 1962, by Academic Press Inc.

ALL RIGHTS RESERVED

No part of this volume may be reproduced in any form, by photostat, microfilm, or any other means, without written permission from the publishers.

Made in the United States of America

Contents of Volume 97

NUMBER 1, APRIL 1962

A. D. McLAREN. Use of Mole Fractions in Enzyme Kinetics.....	1
T. C. TSO AND R. N. JEFFREY. Biochemical Studies on Tobacco Alkaloids. V. The Incorporation of H ³ in Alkaloid Biosynthesis.....	4
YUAN CHUAN LEE AND REX MONTGOMERY. Glycopeptides from Ovalbumin: the Structure of the Peptide Chains.....	9
G. S. BERENSON AND A. F. FISHKIN. Isolation of a Glycoprotein from Bovine Aorta.....	18
HOWARD GEST, JOHN G. ORMEROD AND KARI S. ORMEROD. Photometabolism of <i>Rhodospirillum rubrum</i> : Light-dependent Dissimilation of Organic Compounds to Carbon Dioxide and Molecular Hydrogen by an Anaerobic Citric Acid Cycle....	21
THEO GERRITSEN, HARRY A. WAISMAN, SAMUEL H. LIPTON AND F. M. STRONG. Natu- ral Occurrence of Homocitrulline. I. Excretion in the Urine.....	34
KENNETH A. DOEG AND DANIEL M. ZIEGLER. Simplified Methods for the Estimation of Iron in Mitochondria and Submitochondrial Fractions.....	37
DANIEL M. ZIEGLER AND K. A. DOEG. Studies on the Electron Transport System. XLIII. The Isolation of a Succinic-Coenzyme Q Reductase from Beef Heart Mitoch- ondria.....	41
LAURENCE M. CORWIN. Studies on Peroxidation in Vitamin E-Deficient Rat Liver Homogenates.....	51
E. SLOBODIAN, M. FLEISHER, W. NEWMAN AND S. RUBENFELD. Effects of Gamma Radiation on Ribonuclease.....	59
BERNARD WORTMAN. Arylsulfatase Activity in Beef and Rabbit Corneal Extracts..	70
KOICHIRO AOKI AND JOJI HORI. Precipitation of Bovine Serum Albumin by Thio- cyanate Ion.....	75
JOHN T. LETT, GWENDA M. PARKINS AND PETER ALEXANDER. Physicochemical Changes Produced in DNA after Alkylation.....	80
R. W. NEWBURGH, B. BUCKINGHAM AND HEINZ HERRMANN. Levels of Reduced TPN Generating Systems in Chick Embryos <i>in ovo</i> and in Explants.....	94
JOHN S. RIESKE, RUFUS LUMRY AND JOHN D. SPIKES. The Mechanism of the Photo- chemical Activity of Isolated Chloroplasts. VI. Effects of Heavy Water on the Kinetics of the Hill Reaction.....	100
PETER ALBERSHEIM AND URSULA KILLIAS. Studies Relating to the Purification and Properties of Pectin Transeliminase.....	107
BEATRICE FELENBOK AND ELIZABETH F. NEUFELD. Hydrolysis of Glycopyranosyl Phosphates of the β -D (or α -L) Configuration by a Plant Phosphatase.....	116
EMETERIA YATCO-MANZO AND J. R. WHITAKER. Ficin-Catalyzed Hydrolysis of Elastin.....	122
NEVENKA M. RUMEN AND ETTORE APPELA. Molecular Association Behavior of Apomyoglobin I from the Seal (<i>Phoca vitulina</i>).....	128
JOHN HOFERT, JOHN GORSKI, GERALD C. MUELLER AND R. K. BOUTWELL. The Depletion of Liver Glycogen in Puromycin-Treated Animals.....	134
JAMES ALLEN OLSON AND HOMER KNIZLEY, JR. The Effect of Diphenylamine on Carotenoid, Sterol and Fatty Acid Synthesis in <i>Phycomyces blakesleeanus</i>	138
EUGENE M. SCORAN AND MICHAEL CEFOLA. Stability Constants of 6-Mercapto- purine with Copper (II) and Nickel (II).....	146
J. ENGEL. Investigation of the Denaturation and Renaturation of Soluble Collagen by Light Scattering.....	150

ARTHUR M. SIEGELMAN, ARTHUR S. CARLSON AND THEODORE ROBERTSON. Investigation of Serum Trypsin and Related Substances. I. The Quantitative Demonstration of Trypsinlike Activity in Human Blood Serum by a Micromethod.	159
ARVAN L. FLUHARTY AND D. R. SANADI. Activation of Myosin ATPase by Arsenite in the Presence of 2,3-Dimercaptopropanol.	164
H. Y. YAMAMOTO, T. O. M. NAKAYAMA AND C. O. CHICHESTER. Studies on the Light and Dark Interconversions of Leaf Xanthophylls.	168
D. E. WRIGHT. Amino Acid Uptake by Plant Roots.	174
H. L. WANG, V. H. HARWALKAR AND H. A. WAISMAN. Effect of Dietary Phenylalanine and Tryptophan on Brain Serotonin.	181
ROWLAND H. DAVIS. A Mutant Form of Ornithine Transcarbamylase Found in a Strain of <i>Neurospora</i> Carrying a Pyrimidine-Proline Suppressor Gene.	185
THOMAS G. SCHARFF AND EUGENE H. KREMER, III. A Tentative Mechanism for the Anaerobic Transport of Glucose, Fructose and Mannose in Yeast.	192
DAVID STONE. The Formation and Utilization of Acetate in an Acetateless Strain of <i>Neurospora crassa</i>	199
D. G. BISHOP AND J. L. STILL. The Occurrence and Estimation of Coenzyme Q in <i>Serratia marcescens</i>	208
KENNETH PAIGEN AND CHARLES E. WENNER. The Intracellular Location of the Glycolytic Dehydrogenases in Liver and Hepatoma.	213
LETTERS TO THE EDITORS	
K. L. SMILEY, JR., LORRAINE BUZAS AND P. J. VANDEMARK. A Bacterial Inhibitor Present in Irradiated Lysine·HCl.	217
JAMES TRAVIS AND IRVIN E. LIENER. The Crystallization of Pork Trypsin.	218
NATHAN SHARON, V. GRISARO AND HAVA NEUMANN. Pepsin-Catalyzed Exchange of Oxygen Atoms between Water and Carboxylic Acids.	219
Erratum.	221
List of Forthcoming Papers.	222

NUMBER 2, MAY 1962

MARVIN M. NACHLAS, THEODORE P. GOLDSTEIN AND ARNOLD M. SELIGMAN. An Evaluation of Aminopeptidase Specificity with Seven Chromogenic Substrates.	223
DAVID F. JOHNSON, BARBARA E. WRIGHT AND ERICH HEFTMANN. Biogenesis of Δ^{22} -Stigmasten-3 β -ol in <i>Dictyostelium discoideum</i>	232
KAZUTOMO IMAHORI. Globulin and Myeloma: The Structural Characterization of γ -Globulin and Myeloma Protein.	236
H. A. FLORSHEIM, S. MAKINENI AND S. SHANKMAN. The Isolation, Identification and Synthesis of a Peptide Growth Factor for <i>P. cerevisiae</i>	243
P. JOHNSON AND E. G. RICHARDS. A Simple Instrument for Studying the Polarization of Fluorescence.	250
P. JOHNSON AND E. G. RICHARDS. The Study of Legumin by Depolarization of Fluorescence and Other Physicochemical Methods.	260
RICHARD M. KRUPKA. The Interpretation of pH Effects in Enzyme Reactions: Two Forms of the Michaelis Complex.	277
HERMANN NEMEYER, JASNA RADOJKOVIĆ AND NORMA PÉREZ. The Influence of Diet on Liver Phosphorylase. III. Role of Inactivation on the Decrease of Phosphorylase under Certain Dietary Conditions.	285
ARTURO BONSIGNORE, LUCIO LUZZATTO AND ADELE COLAJACOMO. The Effect of Magnesium Ion on Carbohydrate Interconversion: Action on the Aldolase Equilibrium.	292
FAZAL AHMAD AND A. H. ROSE. The Role of Biotin in the Regulation of Enzyme Synthesis in Yeast.	302
J. J. BLUM. Observations on the Role of Sulfhydryl Groups in the Enzymatic Activity of Myosin.	309
J. J. BLUM. Observations on the Role of Sulfhydryl Groups in the Functioning of Actomyosin.	321
BRUCE F. BURNHAM. Bacterial Iron Metabolism: Investigations on the Mechanism of Ferrichrome Function.	329

ERALDO ANTONINI, ALESSANDRO ROSSI-FANELLI AND ANTONIO CAPUTO. Studies on Chlorocruorin. I. The Oxygen Equilibrium of Spirographis Chlorocruorin.	336
ERALDO ANTONINI, ALESSANDRO ROSSI-FANELLI AND ANTONIO CAPUTO. Studies on Chlorocruorin. II. Some Physicochemical Properties of Spirographis Chlorocruorin.	343
CARL MONDER AND ABRAHAM WHITE. Reaction of Cortisol and Cortisol 21-Aldehyde with Pyridoxamine.	351
SANDRA NEWTON LINTON, AND JAMES W. CAMPBELL. Studies on Urea Cycle Enzymes in the Terrestrial Snail, <i>Otala lactea</i>	360
EDWARD J. KUCHINSKAS AND YALE ROSEN. Metal Chelates of DL-Penicillamine.	370
R. H. JACKSON, E. J. COULSON AND W. R. CLARK. The Mucoprotein of the Fat/Plasma Interface of Cow's Milk. I. Chemical and Physical Characterization.	373
E. J. COULSON AND R. H. JACKSON. The Mucoprotein of the Fat/Plasma Interface of Cow's Milk. II. Immunochemical Characterization.	378
LEON SWELL, ERNEST STUTZMAN, M. D. LAW AND C. R. TREADWELL. Intestinal Absorption of Cholesterol-4-C ¹⁴ -D-glucoside.	383
TUNG-YUE WANG. The Chemical Composition of Nuclear Ribosomes of Calf Thymus.	387
YOSHIKAZU WATANABE AND GERALD R. SEAMAN. Purification and Properties of the Hemolysin from El Tor Vibrio.	393
N. W. TAYLOR AND J. E. CLUSKEY. Wheat Gluten and Its Glutenin Component: Viscosity, Diffusion and Sedimentation Studies.	399
R. S. ROSENFELD AND LEON HELLMAN. Excretion of Steroid Acids in Man.	406
LEON SWELL, ERNEST STUTZMAN, M. D. LAW AND C. R. TREADWELL. Intestinal Metabolism of Epicholesterol-4-C ¹⁴	411
F. F. BUCK, A. J. VITHAYATHIL, M. BIER AND F. F. NORD. On the Mechanism of Enzyme Action. LXXIII. Studies on Trypsins from Beef, Sheep and Pig Pancreas.	417
LETTERS TO THE EDITORS	
PANU VILKKI. An Iodide-Complexing Phospholipid.	425
MARK KIEWER AND HAROLD J. EVANS. Effect of Cobalt Deficiency on the B ₁₂ Coenzyme Content of <i>Rhizobium meliloti</i>	427
J. SRI RAM AND SAROJ S. TAWDE. Conjugation of Antibody to Ferritin by Means of <i>p, p'</i> -Difluoro- <i>m, m'</i> -dinitrodiphenylsulphone.	429
List of Forthcoming Papers.	431
Errata.	432

NUMBER 3, JUNE 1962

ROBERT M. ROSENBERG, DONALD W. ROGERS, JON E. HAEBIG AND THEODORE L. STECK. The Interaction of Serum Albumin with Ethanol.	433
CARL PERAINO AND ALFRED E. HARPER. Concentrations of Free Amino Acids in Blood Plasma of Rats Force-Fed L-Glutamic Acid, L-Glutamine or L-Alanine.	442
J. M. KAPER AND C. HOUWING. Studies on the Interaction of <i>p</i> -Chloromercuribenzoate with Turnip Yellow Mosaic Virus and with Its Artificial Top Component. II. Interrelationships of the Interaction and Structural Changes.	449
Z. DISCHE, C. PALLAVICINI, H. KAVASAKI, N. SMIRNOW, L. J. CIZEK AND S. CHIEN. Influence of the Nature of the Secretory Stimulus on the Composition of the Carbohydrate Moiety of Glycoproteins of the Submaxillary Saliva.	459
MORRIS SEIDENBERG, RAFAEL J. MARTINEZ, ROBERT GUTHRIE, HARRY MINNEMEYER AND HOWARD TIECKELMANN. Phenylalanine Metabolism: The Production of Phenylacetaldehyde by a <i>Proteus</i> Species.	470
THEODORE T. HERSKOVITS. Nonaqueous Solutions of DNA: Factors Determining the Stability of the Helical Configuration in Solution.	474
EDMUND STEVENSON AND EZRA STAPLE. Oxidation of Various Simple Steroids by the Cholesterol Oxidase System.	485
C. JOANNE PIGG, K. D. SPENCE AND L. W. PARKS. Methionine Biosynthesis in Yeast.	491
Q. R. ROGERS, P. D. SPOLTER AND A. E. HARPER. Effect of Leucine-Isoleucine Antagonism on Plasma Amino Acid Pattern of Rats.	497

F. E. KARASZ AND TERRELL L. HILL. The Electrostatic Free Energy of a Discretely Charged Cylinder.....	505
DAVID G. ANDERSON AND JOHN W. PORTER. The Biosynthesis of Phytoene and Other Carotenes by Enzymes of Isolated Higher Plant Plastids.....	509
JOHN W. PORTER AND DAVID G. ANDERSON. The Biosynthesis of Carotenes.....	520
T. KAMEYAMA AND G. DAVID NOVELLI. Effect of Ultraviolet Inactivation and Photo-reactivation on the Induced Synthesis of β -Galactosidase by <i>Escherichia coli</i> ...	529
K. L. SMILEY AND M. SOBOLOV. A Cobamide-Requiring Glycerol Dehydrase from an Acrolein-Forming Lactobacillus.....	538
TAKESHI MORIWAKI AND BERNARD R. LANDAU. Fructose and Glucose Metabolism in the Normal and Diabetic Rat Diaphragm <i>in Vitro</i>	544
TERU HAYASHI, ERIC HOLTZMAN AND HAYES C. LAMONT. The Contraction of DNA-Myosin Fibers.....	551
B. LADEŠIĆ, Z. DEVIDÉ, N. PRAVDIĆ AND D. KEGLEVIĆ. Biochemical Studies in Tobacco Plants. I. The Relative Utilization of the Optical Isomers of α - and β -Methionine through Transmethylation in <i>Nicotiana rustica</i>	556
V. V. RENDIG AND E. A. McCOMB. Synthesis of L- <i>gluco</i> -Heptulose in Plants Fed L-Arabinose.....	562
ENRIQUE FIGUEROA AND ARIANA PFEIFER. Influence of Glycogen Content on the Effect of 2,4-Dinitrophenol on Glucose-C ¹⁴ Incorporation into Glycogen in Rat Liver Slices.....	565
R. L. AIRTH AND G. ELIZABETH FOERSTER. The Isolation of Catalytic Components Required for Cell-free Fungal Bioluminescence.....	567
JORGE E. CHURCHICH. Polarization of Fluorescence Studies of Reduced Bovine Serum Albumin.....	574
ZIGMUND C. KAMINSKI. Maximum Synthesis of Staphylococcal Penicillinase in the Absence of Penicillin.....	578
B. D. SANWAL AND MADHU LATA. Concurrent Regulation of Glutamic Acid Dehydrogenases of <i>Neurospora</i>	582
EDWIN T. NISHIMURA, THOMAS Y. KOBARA, JOHN P. KALTENBACH AND WILLIAM B. WARTMAN. Immunological Evidence of Repressed Catalase Synthesis in Livers of Tumor-Bearing Mice.....	589
M. HATANAKA, E. A. WHITE, K. HORIBATA AND I. P. CRAWFORD. A Study of the Catalytic Properties of <i>Escherichia coli</i> Tryptophan Synthetase, a Two-Component Enzyme.....	596
LETTERS TO THE EDITORS	
M. SHADAKSHARASWAMY AND ROBERT M. HILL. Fractionation of Urease on CM-Cellulose.....	607
CLAUDE LIÉBECQ, ANNETTE LALLENAMD AND MARIE-JOSÉ DEGUELDRE-GUILLAUME. The Apyrase Activity of Potato Extract.....	609
List of Forthcoming Papers.....	611
Books Received for Review.....	612
Errata.....	613
Author Index.....	614
Subject Index.....	617